THE ECLIPSE.

How the Astronomers Observed the Phenomenon.

WATCHING FROM THE SHADOW PATH.

The Stations at Rawlins and Creston, Wyoming.

COMPLETE SUCCESS.

Official Report from the Draper and Harkness Expeditions.

EDISON IN A GALE.

The Corona Closely Examined by Tasimeter, Photography and Polariscope.

OBSERVATIONS AT FORT WORTH

Cloudiness and Disappointment in New York and Its Vicinity.

[BY TELEGRAPH TO THE HERALD.]

RAWLINS, Wy. T., July 29, 1878.

TO THE EDITOR OF THE HERALD:—

Perfect success. Four photographs of the corona, two of the spectrum of the corona, showing it to be continuous. The corona gave continuous spectrum to eye observations. Edison's tasimeter gave decided indications of heat in the corona.

HENRY DRAPER.

THE ECLIPSE AS OBSERVED AT RAWLINS, WYOMING—FAVORABLE WEATHER AND COMPLETE SUCCESS—THE CHARACTER OF THE CORONA DETERMINED—EDISON'S TASIMETER MEASURES THE HEAT FROM THE CORONA.

[BY TELEGRAPH TO THE HERALD.]

RAWLINS, Wy. T., July 29, 1878.

The observation of the eclipse has been a grand success and the astronomers here are in a high state of happiness. Everything passed off in the most satisfactory manner. The various observations made by the members of the Draper expedition show not a few new phenomena. The green line in the spectrum of the outer corona, about which I telegraphed, was absent. This, the astronomers claim, goes to show that the substance producing it is not a permanent body. The spectrum of the inner corona was likewise devoid of lines, showing that it contained neither hydrogen nor the mysterious substance represented by the green line. The observation has likewise proved that the corona is not a self-luminous gas; its light is simply reflected light from the sun.

CONDITION OF THE SUN.

The great luminary during the totality was found to be in a condition of quiescence; only one protuberance was visible and that was exceedingly small. It was observed in nearly the same position occupied by the large one seen by Professor Barker on Saturday, and is supposed to be the same grown smaller through some unknown cause. The day dawned auspiciously, the skies were entirely clear and every confidence was felt. At ten o'clock, however, there appeared away to the east a mass of clouds gradually floating toward the sun. The astronomers watched these clouds with anxiety. By seven o'clock they had become reinforced and the prospects looked far from bright. Noon, however, brought the glad knowledge that their direction had been changed; they were gradually vanishing toward the south. But a new evil soon became manifest. A strong wind began blowing the frail pine structures used for observatories. These commenced to rock. Edison's observatory, which, in its normal condition, is a hen house, was particularly susceptible. He hurried toward it only to find his sensitively adjusted apparatus in an extreme state of commotion. Every vibration threw the tasimeter into a new condition of adjustment. To remedy the evil was far from easy as the time was then so short and precious, it was too late to remove the apparatus and seemingly impossible to break the force of the wind, which was gradually increasing into a tornado. Hatless and coatless he ran to a neighboring lumber yard, and in a moment a dozen stalwart men were carrying boards with which to prop up the structure and erect a temporary fence at its side. This completed, the chronometer indicated half-past one o'clock.

THE ECLIPSE—FIRST CONTACT.

At thirteen minutes past two the moon began to make her first appearance between sun and earth. Again Edison adjusted his tasimeter, but only to find that the gale continued to sway his projecting telescope so violently that a satisfactory result was almost impossible. A rigging of wire and ropes soon partially overcame the difficulty and once more the instruments were ready for work. In a few moments there came from Dr. Draper the announcement "There she goes," and the crowd of spectators instantly levelled their smoked glasses at the sun. The moon had just made her appearance.

PROGRESS OF OBSERVATION.

At half-past two P. M. one quarter of the sun's disc was darkened with slow but steady pace. The progress of the moon continued. In the observatory of Dr. Draper the fall of a pin could be heard; outside almost equal quiet reigned. The only place of disorder was in that frail structure of Edison's. Notwithstanding his efforts the wind continued to give him trouble. In vain he adjusted and readjusted. At three o'clock three-quarters of the sun's disc was obscured, and darkness began to fall upon the surrounding region. The hills around were alive with people watching for the moment of totality. In Dr. Draper's observatory everything was proceeding excellently. The force of the wind had been broken. Edison's difficulty seemed to increase as the precious moment of total eclipse drew near. At five minutes past three o'clock the sun's disk was seven-eighths covered and the country around was shrouded in a pale grayish light, resembling early dawn. All nature seemed in repose; hens which a few minutes before were eagerly feeding left their food and retired to roost, pigeons flew homeward and the night hawks emerged from their haunts and flitted about in quest of prey. The cattle along the ranges stopped grazing.

THE SUN TOTALLY ECLIPSED.

At a quarter past three darkness was upon the face of the earth. The few moments for which the astronomers had travelled thousands of miles had arrived. Still Edison's tasimeter was out of adjustment. All the other instruments were in excellent working order. Totality had brought with it a marked cessation in the force of the wind. Edison worked assiduously, but the tasimeter would not come to a proper condition. At last, just as the chronometer indicated that but one minute remained of total eclipse, he succeeded in concentrating the light from the corona upon the small opening of the instrument. Instantly the fire ray of light on his graduating scale swept along to the right, clearing its boundaries. Edison was overjoyed. The experiment had shown the existence of about fifteen times more heat in the corona than that obtained from the star Arcturus the previous night. The period of totality was exactly 167 seconds. At the expiration of that time the moon had crossed the disk and from the right edges of the sun were beginning to shoot out brilliant rays. Ten minutes later the cocks began to crow, the cattle resumed their grazing and the wolves and night hawks wonderingly flew for their retreats. The new day had dawned and once more Nature wore her normal aspect. The success of the observations were soon announced by Dr. Draper, who emerged from his observatory with light step and smiling face. The crowds shouted "Hurrah!" and for half an hour the astronomers were the lions of congratulations.

OFFICIAL REPORT OF RESULTS.

I telegraph you herewith the official results as given by the astronomers. Dr. Draper obtained four excellent photographs—one of the appearance of the sun during totality and three of the spectrum and corona. The latter were taken from a diffraction grating, and are of different size, the better to exhibit the phenomena which they record. No trace of any ring indicating monochromatic light was found, which proves the light of the corona to be diffused light derived from the sun by reflection, and not due to ignited gas. In former eclipses it has been claimed that the quantity of solar light reflected from the corona was so small as to be scarcely perceptible, and it was doubtful whether the Fraunhofer lines were visible in the corona's light at all, but Dr. Draper's observations to-day revealed them. His eye observations show the absence of a true gaseous spectrum in the corona. Professor Barker's observations show no bright lines in either the inner or outer corona. The green line was not seen, although every precaution was taken to detect its presence. The spectrum was continuous throughout and crossed by Fraunhofer's lines, which were at the base of the corona and which faded out about a solar diameter from the limb. The Professor saw no protuberances

PROFESSOR MORTON'S OBSERVATIONS.

Professor Morton, president of the Stevens Institute, observed the eclipse with polariscopes from the summit of a hill. He reported that the approach of totality was gradual, no flying shadow being visible at totality. The corona was brilliantly white, with a marked prolongation of bright rays in a diagonal direction to the horizon. He saw no solar flames or prominences. His instruments revealed a continuous spectrum with dark lines, or, in other words, a solar spectrum with no bright lines. His observations proved the light of the corona to be radially polarized.

EDISON'S TASIMETER.

Edison's tasimeter showed its power to measure the corona's heat. It, however, was adjusted ten times too sensitively. Never having used it before for a similar purpose, he had no means of telling the degree of sensitiveness necessary. The heat from the corona threw the ray of light entirely off the scale, and before he could make the second test the eclipse had passed away. The experiment demonstrated that, compared to some of the fixed stars, the corona's heat was much greater.

PROFESSOR NEWCOMB'S PARTY.

The eclipse was viewed at Separation by Professors Newcomb, Watson and Lockyer, and with equally good results. The weather was most favorable, the high winds which prevailed at Rawlings not having occurred there. Professor Newcomb feels quite positive that he has discovered a new fixed star in the vicinity of the sun. He, however, will not announce the same positively until after he makes some researches.

IS IT VULCAN?

Professor Watson, of Ann Arbor, has, he believes, discovered a new planet between Mercury and the sun. It is of about the fourth magnitude and only two degrees remained from the sun, while Mercury, hitherto known as the nearest planet, is about fifteen degrees from the sun. Professor Lockyer observed the eclipse with a small Rutherford grating in front of an ordinary camera. His results, he states, have, in conjunction with those of Dr. Draper, demonstrated the ability of science to photograph the spectrum of the corona. The several members of the expedition are to-night in a state of high jubilation, a comparison of their results having proved highly satisfactory.

COMPARATIVE RESULTS.

The last total eclipse which occurred in India was about ten times brighter than the present. No post eclipses, the astronomers say, have presented the corona under similar conditions. To-day the corona was much darker than ever before observed and new phenomena were in consequence seen.

To-morrow all the members of the various expeditions will meet in Denver in convention and there officially compare the various results. Mr. Edison and Professor Barker leave to-night for California on a pleasure trip, to return in two weeks. They intend to attend the St. Louis Scientific Convention before returning to New York. The Convention there takes place on August 21. From the results of to-day's observations the astronomers are unanimously of the opinion that a great advance has been made in the science of astronomy. Matters before subject of dispute and contention have been effectually settled, and new avenues hitherto unthought of have been opened to science.

ELSEWHERE.

Advices received to-night from Denver state that observations there were equally successful. Professor Young found no rings in the ultra Violet, which exactly corresponds with Dr. Draper's observations.

Professor Hastings, at Central City, found consistent tangential polarization, confirming Lockyer's results of 1871. Several excellent drawings of the eclipse were also obtained.

OBSERVATIONS OF THE NAVAL OBSERVATORY PARTY IN WYOMING—LABORS PRELIMINARY TO THE GREAT EVENT—A CLOUDLESS DAY—COMPLETE SUCCESS OF THE EXPEDITION.

[BY TELEGRAPH TO THE HERALD.]

CRESTON, W. T., July 28, 1878.

The City of Creston is a little bit of a hamlet on the Union Pacific Railroad, situated almost on the backbone of the Continent, being only two and a half miles east of the Divide which separates the water shed of the Atlantic from that of the Pacific. The country around is flat and uninteresting. The ground is sparsely covered with sage brush and coarse grass; trees are conspicuous by their entire absence; of brooks and streams there are none, and the horizon is bounded by the distant peaks of the Rocky Mountains. The land seems low and wet, and it is almost impossible to realize that it is really 7,030 feet above the level of the sea. Beside the station, water tank and coalshed of the railroad company the place boasts of only two small cottages, and its population consists of seven white adults, three children and six Chinese laborers, who keep the track in order. Amid such a community life cannot be otherwise than monotonous, and the arrival of the Naval Observatory eclipse party really constituted an era in its history.

THE OBSERVING PARTY.

The instruments of the party came through from Washington in a postal car, which was accompanied by a single member of the expedition, while the main body came on a few days later. The *personnel* is as follows:—

Professor William Harkness, United States Navy, chief of party.

Lieutenant E. W. Sturdy, United States Navy.

Mr. A. N. Skinner, of the Naval Observatory.

Mr. Alvin G. Clark, of the well known optical firm of Alvin Clark & Sons.

Professor O. H. Robinson, of Rochester University.

Mr. L. Trouvelot, of Boston, and his son, who are also sent out by the Naval Observatory, accompany the party, but strictly speaking they are not members of it.

QUARTERS OF THE PARTY.

These gentlemen arrived in Creston about ten days ago and the regular routine of an astronomical party in the field was at once commenced. Their quarters had been established beforehand by Mr. Steinner, and consisted of the postal car already mentioned, which serves as an office and dormitory; a temporary observatory, twelve feet by twenty-two, built of rough boards, the western half of its roof being of canvas, arranged for ready removal when the instruments are to be used; a mess tent; a cooking tent, and a small tent which shelters the two soldiers who guard the party at Creston. Nothing can be had but air, and even that is rather thin, for the barometer indicates a pressure of only 23½ inches. The fuel and water required for the daily use of the party are brought many a weary mile by the railroad company, and are generously furnished free of charge. The tents, provisions and camp equipage come from Fort Steele, and to Major Thornburg, the commandant of the post, the comforts enjoyed by the party are mainly due.

SCIENTIFIC APPARATUS.

The scientific apparatus brought by the party consists of a sextant and artificial horizon for determining local time and latitude, a large equatorial camera for photographing the polariscopic phenomena of the corona, a three inch telescope with a spectroscope for examining the spectra presented during totality, a second three inch and a two inch telescope for observing the contacts and as far as possible the optical appearance of the eclipsed sun, a motor spectroscope for examining the general distribution of the different kinds of light emitted by the corona. Professor Harkness, as chief of the party, is of course responsible for all its operations, but he has devoted his attention mainly to the scientific work, and has left the duties of the camp, the proper performance of which is so essential to the comfort of all concerned, to his executive office, Lieutenant Sturdy.

LIFE IN THE FIELD.

As few persons have ever been with an eclipse expedition in the field it may be a matter of interest to describe the daily life of the party. About half-past six in the morning the members of the scientific corps rise and perform their ablutions, all using the same tin basin, one after the other, and drawing the necessary water from an old whiskey barrel, the odor from which is by no means agreeable. Near one end of the car the toilets are made. They are not elaborate, and it takes but a few minutes to prepare for breakfast. The soldiers have risen an hour before, and about seven o'clock one of them, who acts as cook, pokes his head into the car and sings out, "Gentlemen, breakfast is ready." This is the signal for a general stampede, and it is not many seconds before all are assembled in the mess tent. Some members of the party amuse themselves by giving elaborate orders for broiled spring chicken, quail on toast and other delicacies, to which Rodman, the cook, replies most politely and brings in coffee or tea, cold Leans, butter cakes and hard tack, and these edibles disappear rapidly down the throats of seven hungry men. About half-past seven Professor Harkness and Mr. Skinner observe for the local time with the sextant and artificial horizon. The latter instrument is a little basin on mercury covered with a glass roof, in which a reflected image of the sun can be seen, and the sextant consists of two mirrors, a small telescope, a divided arc by which the angle between the sun and this rebected image can be measured. The measurement is made by looking into the telescope pointed toward the basin of mercury, bringing the direct and reflected images of the sun into contact by moving one of the mirrors, noting the time indicated by the chronometer when this is done and reading off the divided arc. After repeating this process six times certain other observations are made for determining the index correction of the sextant, and then half an hour's computing suffices to determine the error of the chronometer. At eight o'clock all the instruments are dusted and inspected, and dummy practice is commenced and continued pretty steadily till about half-past eleven. Actual practice on the sun cannot be begun till afternoon, because the roof in the eastern side of the observing hut is not removable. At ten o'clock time signals are received by telegraph from the Naval Observatory at Washington for the purpose of determining the longitude of the station. At noon extant observations are made for latitude, the process being similar to that just described for obtaining local time. At one o'clock dinner is served, consisting of boiled ham, of corned beef, some kind of canned vegetables, hard tack and tea or coffee, with occasionally a little preserved fruit. About two o'clock the sun gets so far around that practice can be commenced upon it by removing the canvas roof from the western side of the observatory. The drill is similar to the dummy practice in the morning, except that the instruments are now actually pointed to the sun. Messrs. Clarke and Skinner go to the equatorial camera, which, by the way, has an object glass of six inches aperture and thirty-six inches focus and is nearly twice as powerful as any heretofore used, the first named gentleman taking charge of the clock which keeps the instrument pointed on the sun and inserting and removing the sensitive plates, while the second named gentleman makes the exposures, timing them by means of a series of carefully prepared sand glasses. All the operations necessary for obtaining photographs of the corona are gone through with precisely as done during the eclipse except that they are repeated over and over again in order that the operators may become perfectly familiar with them. The plates are exposed for intervals varying from three to sixty seconds, one of the objects aimed at being to ascertain the maximum exposure which can be given up on the corona with advantage. Professor Robinson practises with the smaller camera, which has a large double image prism mounted before a Dallmeyer rapid rectilinear lens of about twelve inches focus, the whole being arranged to register photographically the polarization phenomena exhibited by the corona. This is thought to be a matter of considerable importance, because scientific men are by no means in accord as to what these phenomena actually are. Professor Harkness' own instrument is a three-inch telescope armed with a powerful spectroscope, to which has been added a fluorescent eye piece kindly lent by Mr. Lockyear, the well known English physicist. This apparatus will be used for investigating the ultra violet spectrum of the corona and prominences, and in its management the Professor will be assisted by Lieutenant Sturdy.

At a quarter past two o'clock time signals are received by telegraph from the Allegheny Observatory, and at half-past four sextant observations are again made for local. Soon after this practice closes for the day and at six supper is served. There is not much variety in camp cookery and the *menu* of this meal scarcely differs from that of breakfast. After supper most of the party take a little stroll by way of a constitutional, and at nine o'clock in the evening the day's work is concluded by the exchange of telegraphic longitude signals with Professor Safford, who is stationed at the United States Engineer Observatory at Ogden. By ten o'clock everybody is tired out and each man wraps himself in his army blanket and lies down upon the buffalo robe which serves as his couch. Sheets are unknown, but the steady work during the day and the cool, refreshing air of the night never fails to bring that sweet repose for which city residents sigh in vain during the torrid July nights. Nevertheless, slumber in the postal car at Creston is not wholly unbroken, for at two o'clock in the morning the thunder of the mail train coming in from the distant Atlantic States always arouses some of the sleepers, and at least one of them tumbles out of bed to receive the wished for letters from home.

Amid the routine just described the time sped rapidly by, every moment being fully occupied, and one day being just like another, except that the weather, which was bad at first, steadily improved. This morning the temperature was down to 46 degrees, not a breath of air was stirring and the sun arose upon a cloudless sky. Everything promised well for the eclipse, and so far as a transparent atmosphere is concerned that promise has been kept; but unfortunately before breakfast was over the wind began to rise and gradually increased in violence till the afternoon, when it blew a perfect gale. This, however, made little difference to the astronomers, because Creston has the reputation of being a windy place, and effectual means has been taken to prevent the instruments from being disturbed. Dinner was over at twelve o'clock, and every man betook himself to the observatory and gave the final touches to his instruments. The wind blew fiercely, but a few extra shelters sufficed to place the instruments under almost perfect protection, and the sky was cloudless.

THE ECLIPSE.

At four hours and two minutes, Washington time, everyone had his eye to his telescope, and Mr. Rexroad, the station agent, began to beat and count seconds from the chronometer. The predicted time of first contact was four hours, three minutes and nine-tenths, Washington time, but that passed, and second after second elapsed until four hours, four minutes and forty-two seconds was reached, and then the moon showed itself, just beginning to eat into the edge of the sun. After this the telescopes were abandoned and attention was directed to the photographic and spectroscopic apparatus, some of which had been disarranged to allow the use of the telescopes for observing the first contact. A half hour sufficed to place everything in perfect order, and the beginning of totality was anxiously awaited. At five hours, fifteen minutes and seventeen seconds, Washington time, it came, and then everybody worked as if for their lives. The darkness was like that of deep twilight, and the beauty of the corona was enchanting. But there was no time to pay attention to such things. Professor Harkness, assisted by Lieutenant Sturdy, searched by ultra violet lines in the spectra of the cromosphere for prominences, but found none. He used a spectroscope provided with one of Mr. Rutherford's magnificent diffraction gratings, having 17,296 lines to the inch; but such instruments, although very powerful and giving excellent definition, are known to possess less light than prism spectroscopes, and whether the failure to observe any ultra violet lines was due to this cause or to the fact that the cromosphere was to-day exceedingly thin and the prominences being faint can only be determined by comparing notes with other observers.

THE EQUATORIAL CAMERA.

Messrs. Clarke and Skinner worked manfully with the equatorial camera and carried out the programme for it most successfully. Six bromide emulsion dry plates were exposed, and there is no doubt that they will give excellent pictures, but as they will not be developed for two or three days it is not possible to describe them at present. The last plate was intended to be exposed three seconds, but before that time had elapsed the sun burst out and the exposure had to be abruptly terminated. Professor Robinson exposed four dry plates with a polariscopic camera, and it is believed that they will do much to settle the vexed question of the real character of the polarisation of the corona.

Mr. Truvelot and his son made a splendid sketch of the corona, which, by the way, did not disappear from their vision for three minutes and twenty-two seconds after the reappearance of the sun. No person was disengaged to observe the third contact; but it is known that the totality lasted about two minutes and fifty-six seconds.

THE LAST CONTACT.

Immediately after it ended the dismounting of the photographic apparatus was commenced and continued for three-quarters of an hour, when a pause was made to observe the last contact. This time Mr. Skinner beat the seconds indicated by the chronometer, and the moon finally took leave of the sun at six hours twenty-two minutes twenty-six seconds, Washington mean time. In this connection it is well to note that it would have been impossible to give these times so soon after the eclipse had it not been for the courtesy of the Atlantic and Pacific and Western Union Telegraph companies, who have mainly furnished the numerous time signals required free of all cost.

As this despatch is going the astronomers are busily engaged in packing their instruments and to-morrow Preston will know them no more.

OBSERVATIONS AT SANTA FE, N. M.

[BY TELEGRAPH TO THE HERALD.]

SANTA FE, July 29, 1878.

The contacts of eclipse were successfully observed at Santa Fe by Professor Rock, astronomer of Wheeler's survey, assisted by Signal Observer Frost. Duration, 2h. 15m. 31s. Weather very favorable, and valuable series of meteorological observations also obtained.

APPEARANCES RESULTING FROM THE ECLIPSE IN COLORADO—A LURID GLARE THROWN OVER THE EARTH.

DENVER, July 29, 1878.

The sky was entirely clear until one o'clock this afternoon, when a few masses of cumulus clouds showed themselves over the mountains toward the north and northwestward. With this exception the sky was perfect and the atmospheric conditions of a most favorable character for successful observations of the eclipse. The housetops were thronged with people, and the higher buildings were especially in demand, as from them the dark shadow of totality could be seen as it swept onward over the plain. The first contact occurred at twenty minutes past two o'clock, Denver time, and ten minutes later the presence of the moon at the edge of the sun's disk was plainly perceptible with the aid of smoked glass. By three o'clock the sunlight had moderated in a marked degree, being of a pale yellow color. Later on a lurid glare overspread the earth, the heat of the sun was no longer oppressive, a light similar to twilight was visible in the horizon, and the light flecks of clouds began slowly to dissolve owing to the change of temperature. As the period of totality approached the sight from elevated stations was grand. An extremely dark shadow fell on Long's Peak, seventy-five miles distant, and sweeping rapidly southeastward covered the plain like a gray pall, while to the northeastward clouds could be seen bathed in sunlight, simulating a beautiful sunset. During the period of obscuration the moon appeared like a huge black ball, surrounded by a beautiful circle of light, and when the sunlight again burst forth the cocks crowed as though morn had dawned.

THE PLANET VULCAN.

Astronomical parties, as far as heard from, failed to discover the planet Vulcan, although able to discover stars of the sixth magnitude. Professor Young reports that he discovered no ultra red or ultra violet lines, but that at the moment of totality the Fraunhofer lines were beautifully reversed. This was the most important result of his observation and confirms observations made at Siam. Both of the H lines were also reversed. Very bright lines were seen near the large B, which confirms Professor Poyson's observations. He also saw bright lines F and 1,474 Kirchhoff.

Edison's tasemeter failed to work satisfactorily, and he used a thermopile, which caused unsteady motion in the galvanometer.

THE MOON'S PATH.

Professor Colbert reports that his observations tend to show that the moon's path in the heavens lay a little farther to the southward than is indicated by the lunar tables or else that the estimate of the moon's diameter is too large. Perhaps both measurements made by Mr. Easterday indicated that the coroner extended out on an average of about twenty-six minutes of an arc, corresponding to a distance of fully 700,000 miles all around the sun.

It was strongly striated, and in the direction of the ecliptic the rays were nearly straight, while above and below that line they were markedly speral in character, and some of the lines at the base formed an angle of not less than 30 degrees, with a prolongation of the sun's rays. The chromosphere was distinctly seen by Professor Hough, indicating a thickness of some 2,000 miles.

PROTUBERANCES.

The protuberances were much less prominent than at most of the recent eclipses. Two rather pale ones were seen on the western side of the moon. Mr. Thomas also saw line 1474, Kirchhoff, but did not discover any new lines. The temperature during the eclipse was reported by the Signal officer as follows:—At 2:23 P. M., in the sun, 117 degs.; at 3:35, 82 degs.; at 4:35, 100 degs. The humidity, at 2:30 P. M., 12 per cent; at 3:40, 22 per cent; at 5:10, 17 per cent.

AT IDAHO SPRINGS.

At Idaho Springs observations were made by Professor Eaton, of Packer Institute, and S. V. White, of Brooklyn, N. Y. The day was cloudless, and numerous sketches of the corona were made. There was an entire absence of the pink flame usually seen during total eclipses.

Professor Holden and Professor Compton were stationed at Central City. Numerous drawings of the corona were made, but no report of scientific results has been received.

OBSERVATIONS AT FORT WORTH—PERSONNEL OF THE PARTY AND RESULTS OF THEIR LABORS.

[BY TELEGRAPH TO THE HERALD.]

FORT WORTH, Texas, July 29, 1878.

The eclipse party stationed here met with perfect success. The party consisted of the following gentlemen and equipments:—

Leonard Waldo, of Harvard University, who had charge of the photographic apparatus for investigating polarization of corona and for taking pictures during totality.

R. W. Wilson, of Harvard, who observed contacts and physical phenomena with a three-inch Secretan telescope and polarizer.

Professor J. K. Rees, of Washington University, St. Louis, noted first and last contacts with a five-inch Alvan Clark telescope, and, with a two-prism spectroscope by Grunnow, made spectroscopic observations during totality.

F. E. Seagrove, of Providence, R. I., had a five-inch Alvan Clark instrument and one of Browning's spectroscopes and watched first and last contacts and the corona generally.

Mr. W. H. Pulsifer, of St. Louis, with a four-inch Clark telescope and ten-prism Browning spectroscope, observed the corona before, during and after totality.

Mr. Alfred Freeman, of Dallas, did the photographing.

THE OBSERVATIONS.

The observers occupied the house and grounds of S. W. Lomax, banker, of this place. Day opened rather threatening and remained cloudy till three o'clock, when the sun came out clear and bright between two banks of clouds. All four contacts were splendidly observed under the most favorable conditions. The first contact occurred at eleven minutes past three and the last contact at nineteen minutes past five, local mean time. The duration of totality was two minutes and thirty seconds. Five photographs were taken during totality, two of them polariscopic, and all came out sharp and clear.

SPECTROSCOPIC OBSERVATIONS.

The spectroscopic observations confirmed those of Young and Harkness as to the continuous spectrum of the corona. Sharp spectroscopic contacts were observed. Mr. Pulsifer witnessed the reversal of the Fraunhofer lines and Mr. Seagrove saw and measured line 1,474.

The prominences as seen by Willson were large, three in number and of a pearly white color.

OBSERVATIONS ELSEWHERE.

Supplementary observations as to limit of the sun's shadow and duration of totality were made at McKinney, Dallas, Brenmond, Allen and other neighboring points by extra observers, supplied with stop watches. A large number of sketches were made of the corona, which appeared in two great masses on the east and west limbs of the sun, with intervening dark spaces.

The darkness was not excessive. There was no appearance of odiacal light, but few stars, and no effort made to discover intra Mercurial planets. Observers were immensely pleased and highly elated with their fine weather and successful work.

APPEARANCE OF THE ECLIPSE AT SAN ANTONIO, TEXAS.

[BY TELEGRAPH TO THE HERALD.]

SAN ANTONIO, Texas, July 29, 1878.

The moon was first observable from this point on the northern edge of the sun at nine minutes past three. The eclipse lasted until fifteen minutes past four. Nine-tenths of the surface of the sun was obscured. The thermometer fell five degrees. A cloud just under the sun presented a very strange appearance, being made up of all the colors of the rainbow, resembling an irregular piece of mother of pearl.

PREPARATIONS AT LAFAYETTE COLLEGE NEUTRALIZED BY THE CLOUDS.

[BY TELEGRAPH TO THE HERALD.]

EASTON, Pa., July 29, 1878.

Great preparations had been made to-day by the professors of Lafayette College to witness the eclipse of the sun, but owing to the cloudy weather and rain they were unable to make any observations.

NOT VISIBLE AT SARATOGA.

[BY TELEGRAPH TO THE HERALD.]

SARATOGA, N. Y., July 29, 1878.

The eclipse was not visible here as the afternoon was cloudy.

NO OBSERVATIONS AT DARTMOUTH.

HANOVER, N. H., July 29, 1878.

Owing to unfavorable weather no observation of the eclipse was taken at the Dartmouth Observatory.

WEATHER CONDITIONS AS REPORTED TO THE SIGNAL OFFICE—SUCCESSFUL OBSERVATIONS AT PIKE'S PEAK.

WASHINGTON, July 29, 1878.

Reports to the Signal Office of the weather in localities where best observations were to be taken of the eclipse seem to indicate that the views of it must have been successful at many points. At Pike's Peak, where General Myer, Professor Abbe and others were making a scientific official observation, there was complete satisfaction, and to-night the following telegram was received at the Signal Office in this city from General Myer, Chief Signal Officer.

PIKE'S PEAK, July 29, 1878.

Observations successful. Corona traced several diameters from the sun and seen for five minutes after totality.

The observation was taken at all points at thirty-five minutes past four o'clock P. M. Washington time.

CONDITIONS OF THE WEATHER.

The reports at the Signal Office to-night give the following conditions of the weather at points named:—Albany, cloudy; Alpena, Mich., cloudy; Augusta, Ga., heavy rain; Baltimore, threatening weather; Buffalo, cloudy; Burlington, Vt., cloudy; Cairo, fair; Charleston, fair; Cheyenne, fair; Chicago, fair; Cincinnati, threatening; Cleveland, heavy rain; Corsicana, Texas, cloudy; Denver, clear; Detroit, raining; Dodge City, Kan., fair; Duluth, fair; Keyport, Me., hazy; Fort Gibson, Ind. Ty., fair; Galveston, clear; Grand Haven, Mich., fair; Keokuk, fair; Knoxville, raining; Leavenworth, clear; Louisville, cloudy; Milwaukee, clear; Montreal, hazy; Nashville, clearing weather; New London, Conn., cloudy; New York, cloudy; New Orleans, fair; Omaha, clear; Philadelphia, cloudy; Pittsburg, cloudy; Portland, Me., cloudy; Portland, Oregon, clear; Rochester, raining; Salt Lake, clear; San Diego, Cal., clear; San Francisco, Cal., clear; Santa Fe, New Mexico, fair; Savannah, cloudy; St. Louis, fair; St. Paul, cloudy; Toronto, Canada, raining; Washington, cloudy; Yankton, D. T., clear.

OBSERVATIONS ELSEWHERE.

At Lake St. Charles, Louisiana, the eclipse began at 2:45 o'clock and ended at 4:45. The total eclipse occurred at 3:45 o'clock and lasted one minute. Clouds occasionally obscured the sun, but the view at the commencement of the eclipse, during most of its duration and for the last half hour was wholly unobscured. At the moment of total eclipse the time could not be noted by sight without the aid of artificial light, and during the following minute a perceptible halo ringed the moon, whose surface presented a steel blue tint. No perturbation was evinced by animals; dogs and cats retained their positions during the eclipse, and the cattle browsed quietly in the fields.

At New Orleans there was opportunity for observing only a partial eclipse, the view being entirely obscured by clouds from half-past four to six P. M.

At Vicksburg, Miss., the eclipse first became visible at 4h. 31m. 20s., was almost total at 5h. 41m. 8s., and presented its last view at 6h. 40m. 38s., Washington time.

At Cincinnati extensive preparations had been made at the Cincinnati Observatory to take observations of the eclipse, but a few minutes before the time of contact clouds came up from the west, completely obstructing the view.

At Springfield, Mass., the eclipse was obscured by clouds.

In Philadelphia all attempts to observe the partial eclipse proved failures, the sun being obscured by heavy clouds all the afternoon.

In Washington it was cloudy and rainy during the greater portion of the day and no observations of the eclipse could be obtained.

At Halifax, N. S., a partial eclipse was plainly visible at six P. M.

At London, Ont., the eclipse was not observable owing to the cloudiness of the sky and a heavy downfall of rain.

At Dallas, Texas, the observations of the solar eclipse was generally successful. Thin clouds interfered somewhat with all the observations until near the time of the last contacts. The following observations have been furnished by Professor Todd, of Washington:—First external contact at 4h. 33m. 06 3-10s. Second internal contact 5h. 38m. 32 3-10s. Third internal contact, 5h. 40m. 57 9-10s. Fourth external contact, 6h. 40m. 25 6-10s. The record is in Washington mean time. Professor Todd made a careful search for the supposed extra mercurial planet with a four inch telescope, but none was seen. The clouds were so dense that no objects whatever were seen near the sun. The corona was very brilliant. Several drawings were secured and photographs taken. Professor Todd was well satisfied with the results of his observations.

At St. Louis Professor Woodward, of Washington University, made observations of the eclipse. At meridian time, determined by the observations of the sun here, and not Washington time, was used, and for other reasons he does not claim for his observations any scientific importance.

At Utica the obscuration of the sun by the clouds during the whole of the afternoon prevented any observation of the eclipse at Litchfield Observatory, Hamilton College.

THE CHANGING OF LIGHT AND SHADE IN NEW YORK CITY—JUST A PEEP AT THE DARKENED SUN.

Long before the time of first contact a busy trade was being driven on Broadway and around the HERALD office, the Post Office, in the uptown squares and the cross streets, by the vendors of colored glass. These little pieces of merchandise were intended for the amateur observers who could not or would not use telescopes. But the increasing cloudiness made the trade fall off toward four o'clock, as the would be watchers lost confidence in themselves and the weather conditions. However, the enthusiasts persisted in their preparations, and fixed their blue or brown glasses and HERALD diagrams for the noble purpose of watching the transit of the moon over the face of the god of day.

At thirteen minutes to five o'clock P. M. the sun became entirely obscured by clouds to the large majority of observers. The mere accident of being a few blocks away, however, gave some a momentary peep, and those who had telescopes assert that they witnessed the first contact. Of course, anxiety grew with the age of time, and the cloudiness grew also, creating a condition of things the reverse of agreeable. Five minutes to five came with little prospect of even a brief clearing of the sky. But at 4:57½ the sun peeped through a rift in the clouds for about three seconds, and then disappeared. The following observations were then made:—5 P. M., dense cloudiness; 5:05, a dark nimbus cloud overspread the entire western sky; 5:10, cloudy, sun invisible; 5:15, densely cloudy; 5:20, indications of a break and prospect of a brief view; 5:25, clouds growing lighter; 5:30, tantalizing breaks above and below the sun; 5:36, the upper limb of the sun visible behind thin clouds and the dark disk of the moon pretty clearly defined, covering about two-thirds of the sun's face. This view lasted but a few minutes, and was closed by the advancing clouds. From 5:40 to the time of last contact the sun was invisible. From a vertical line from the sun the darkness seemed to decrease to the northward and southward, making the horizon at these points appear relatively much brighter than in the west. Toward the close of the eclipse the lead colored clouds in the west became faintly tinged with a dull red and after a little while assumed the tint common to them on a cloudy evening just before sunset. The wind in New York was southerly. The barometer stood at 30.07 inches when the eclipse commenced and the thermometer at 76 degrees.

THE ECLIPSE SEEN IN BROOKLYN AT PROFESSOR PARKHURST'S OBSERVATORY.

The observation of yesterday's eclipse, which Professor Henry M. Parkhurst was prepared to make at his observatory, came, like those in this city, to naught. The Professor's nine inch Fitz-refracting telescope, with the four inch one parallel to it, were in position at the time when it was calculated

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